PROJECT MANAGEMENT GUIDELINE

APPENDIX D – Cost/Benefit Analysis Guide

Appendix D: Cost/Benefit Analysis Guide

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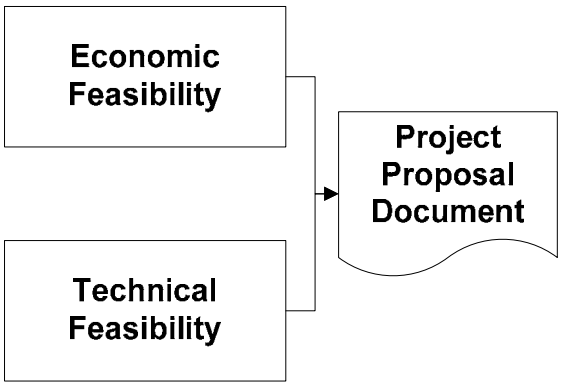
Appendix D: Cost/Benefit Analysis Guide

Overview

Decision makers must make the most of scarce resources and at the same time respond to ever-increasing demands for improved performance and new technology. The importance of investment management in information technology continues to increase. The failure rate of many IT investments raises legitimate concerns about the value of those investments. As a result, IT investment proposals often require a rigorous business case to justify new IT investments. The business case, and associated feasibility studies, will include methods of assessing the costs and returns expected from the investment. These methods include the Cost/benefit Analysis (CBA), which is the primary subject of this appendix to the Project Management Guideline.

Generally, feasibility studies help to determine if potential solutions are viable and provide a basis of comparison and selection between alternatives. Technical feasibility studies focus on the technology of the solution and are used to determine a preferred IT solution from a technology perspective. An economic feasibility study, such as a Cost/ Benefit Analysis (CBA), determines if a solution is economically sound and cost effective. Based upon these analyses, a technology solution is proposed in the next step of the initiation process, and the results of the technical and economic feasibility studies are used to justify the proposed technology solution.



Appendix D: Cost/Benefit Analysis Guide

Cost/Benefit Analysis is a systematic approach to estimating the strengths and weaknesses of technology alternatives that satisfy agency business requirements. This guideline will help individuals prepare cost/benefit comparisons with recommendations on how to gather information, present costs, determine benefits, identify risks, and draw economically sound conclusions.

Cost/Benefit Analysis*:* An analytical approach for choosing the alternative best suited to meeting an agency's business requirements.

The guideline incorporates the following features:

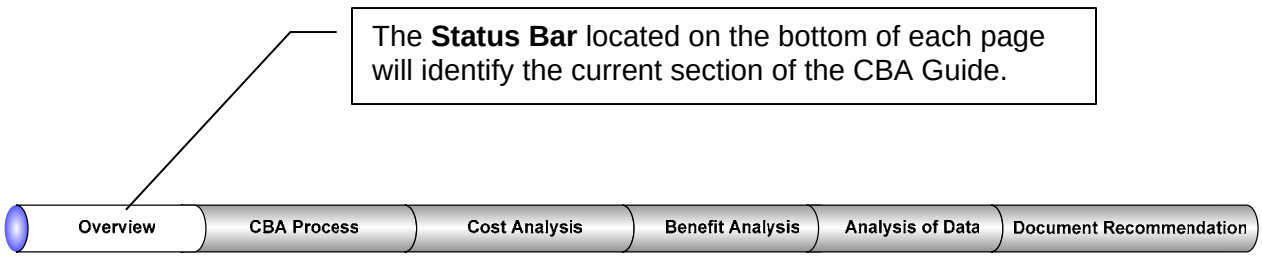
- **COV Cost Estimating Rules** - Template formats allow agencies to associate cost and benefit categories to potential budget items by using expenditure structures published by the Virginia Department of Planning and Budget.
- **Best Practices** - This guideline follows established financial practices for economic analysis.
- **Generic in Nature** - It can be applied to all technology acquisitions considered appropriate by the agency.
- **Examples -** A problem or description used to illustrate a principle or method.
- **Spreadsheet Modeling** - The methodology is oriented toward automated spreadsheet technology to simplify the analysis.
- **Questionnaires** - Forms containing a set of questions used to gather information.

Successful IT Investment decision-making and management begins with the identification of benefits and costs. These two factors are essential items regardless of the nature of the investment, metrics applied, or approach used to value them.

Investments in the public sector are generally undertaken for one, or a combination, of four general purposes:

1) Expansion or improvement in service or function of agency.
2) Reduction of operating costs/increasing revenues.
3) Research and development.
4) Mandate

Benefits should clearly answer the question, “What does this investment provide the customer, public or agency?” Whether expressed in qualitative or quantitative terms, benefits should relate directly to the fulfillment of specific, expressed needs.



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Cost/Benefit Analysis Process

The Cost/Benefit Analysis process can be broken down into seven sequential steps depicted in Figure 1-A. Each step is described in detail in the following pages.

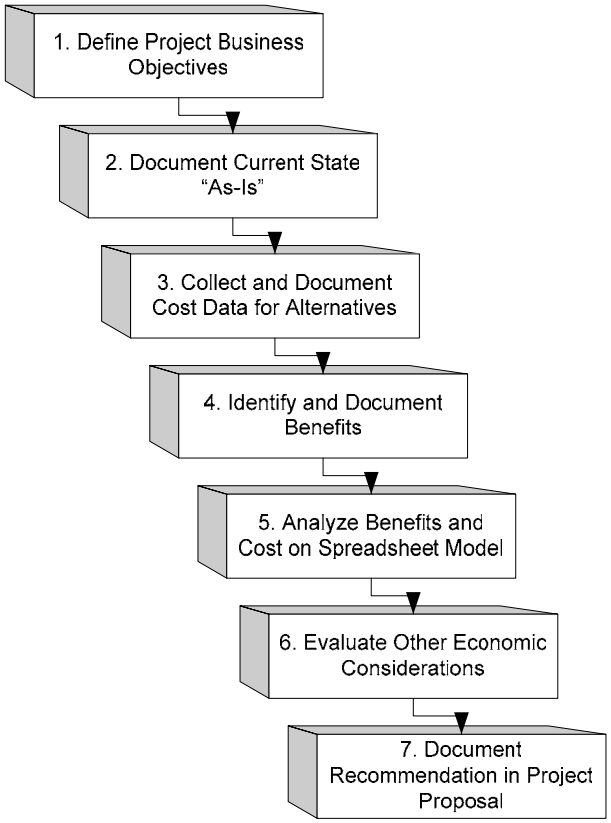

Figure 1-A – Cost/Benefit Analysis Process Steps

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I. Cost/Benefit Analysis Background

A. Define project business objectives

The CBA should include the project business objectives and other pertinent background information. A CBA stands on its own and can be understood by a reviewer who is not intimately familiar with the agency and its business process. The project business objectives documented in the CBA must match the objectives listed in Project Charter and Proposal. The objectives should improve the business process so agencies can better perform their mission. Key items addressed are:

- **Business Problem/Issue Definition** – A brief, compelling, service-oriented problem statement.
- **Background** - Pertinent issues such as staffing, system history, and customer satisfaction should be addressed.
- **Project Business Objectives** – A description of the specific objectives should be stated in terms of supporting the Agency's strategic plan.

It is crucial that the responsible manager understand the business issue when analyzing potential solutions.

B. Document current state – "as is"

The baseline for any CBA is the current process or "As Is" state. The CBA must thoroughly document the current process to ensure that everyone involved in the CBA preparation and review understands that process. A clear understanding of the current business process provides the basis for decisions regarding new alternatives. Flow Charts and procedural outlines are good tools for documenting the current process.

C. Estimate future requirements

It is very important to accurately estimate the customer requirements because they drive the system design, and ultimately the system costs and benefits. The estimated future workloads, estimated useful life of an investment, and the period of time over which it is compared are all possible assumptions that need to be identified and considered. An assumption is something you believe to be true for purpose of this analysis.

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II. Identify and Measure Benefits and Costs

A. Collect and document cost data

The acquisition and implementation of an alternative influences existing agency operations. Realistically estimating the cost of this impact is part of the overall analysis. The collect cost data step is the preparation for the actual estimating costs and benefits in later steps.

1. Document CBA assumptions

Because a CBA often relies on many assumptions, it is important to document all of them, and, if possible, justify them on the basis of prior experiences or actual data. For example, you may assume that the PC hardware and software for a system will need to be upgraded every four years. This could be justified on the basis of the rapid increases in capacity and speed and decreases in cost for PCs over the past 15 years.

This can also be an opportunity to explain why some alternatives were not included in the analysis. Some alternatives are eliminated in the early stages of a CBA because of a conclusion that they are not feasible. If that conclusion is based on an assumption, the assumption must be clearly explained and justified.

2. Choose at least three alternatives

A CBA must present at least three alternatives. One alternative that should always be included in the CBA is to continue with no change. During the Business Process Evaluation, a number of alternatives may be considered. Other alternatives could be whether to do development, operations, and maintenance with in-house personnel or contractors. Each technical approach that is a viable alternative from a business process perspective should be included as an alternative. However, the number of technical approaches may be limited if only one or two are compatible with the Commonwealth Enterprise Architecture. Some alternatives can be addressed and rejected because they are not feasible for reasons other than costs and benefits.

Management has probably decided that the no change alternative is unacceptable, or you would not be looking at other alternatives; however, the costs and benefits of that alternative may not have been documented. Including that alternative should prove that it is not the best alternative. If there were other factors that make the no change alternative unacceptable, it would not be necessary to compare its costs and benefits against the feasible alternatives.

It is important to first define the costs of a baseline technology against which each alternative solution is evaluated. If there is no technology in place, choose one of the alternatives as the baseline and justify this decision in the analysis.

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During the early stages of an IT project, there are many alternatives to be considered. This is particularly true during the Business Process Evaluation. If the business process is operating in a manner that makes best use of IT to maximize its efficiency and effectiveness, the process may not need to be changed. If the process can be changed to take advantage of IT, there may be two or more alternatives that appear to be feasible. If so, they may be alternatives that should be included in the CBA.

Any IT project that involves acquiring equipment should consider the alternatives of leasing and purchasing. With the rapid changes in technology, the useful life of desktop PCs has been reduced to less than 5 years.

3. Estimate and document project cost related to each alternative

Estimated costs are the potential resources consumed by the technology being considered. The cost categories include Internal Staff Labor, Services, Software Tools, Hardware, Supplies and Materials, Facilities, Telecommunications, Training, IV & V and Contingency (Risk). If the technology warrants, the cost categories can be further subdivided.

Cost Category Model – Table 3.1

Category	Definition	Cost Items
Personnel		
Internal Staff Labor (Personnel Services)	Internal staff labor costs include the salaries and benefits of employees assigned at least part time to the project. (PM Guideline – Project Proposal Template)	Project Manager Administrative Support IT Analyst Application/Programming Analyst Network Analyst/Engineering IT Support
Services (Contractual Services)	Costs incurred as a result of the work performed by a contractor or vendor.	Contractor supplied development and maintenance
Facilities	System or project related floor space and utilities cost.	Systems related floor space and utility cost Project related floor space and utility cost
Hardware	Machinery and equipment (CPU, disks, tapes, modem, cables, etc.).	Desktop workstations Laptop computers Peripheral servers Communications hardware Network Cabling Auxiliary Furnishing
Maintenance and Support	Include expenditures for services provided to maintain computer software and/or hardware.	

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Software Tools	All applications software, whether packaged or requiring development, and all systems software such as assemblers, compilers, CPU performance measurement systems, database management systems, file back-up and recovery, job accounting, operating systems, programming aids and development systems and soft-merge utilities. (APSPM)	Purchased COTS applications Desktop/workgroup software Network operating systems Applications development tools
Licenses	Include payments to software vendors for the renewal of software licenses for off-the-shelf applications and utilities.	Renewal of software licenses
Training	Includes expenditures such as registration fees and materials for attending training courses, workshops, and conferences on information technology.	Computer based training (CBT) On site training Off site training Training materials
IV & V	IV&V is a quality assurance process carried out by an independent third party. The best practice is to acquire the services of a qualified service provider. (COV ITRM Standard GOV2004 - 02.3.2 October 28, 2004)	
Contingency (Risk)	A contingency is defined as an unforeseen condition that affects costs of a capital project. (Volume No. 2—Classification & Coding Structure)	
Supplies and Material	Project related supplies and materials.	

B. Collect the Cost Data

Costs are the resources consumed by the technology being considered.

Cost data must be collected for estimating the cost and benefits of each project alternative. Look beyond the confines of your agency for help in developing cost data. Some external sources might include:

1. Historical Organization Data

Historical contract data for an agency can be used to estimate the future purchase price of hardware, software, and services. If contracts were used to provide system support in the past, they can give you the costs for leasing and purchasing hardware and hourly rates for contractor personnel. Contracts for system support services for other systems in your agency can provide comparable cost data for the development and operation of a new system. Adjust the cost to reflect current year price levels. Document all adjustments for future reference.

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2. Market Research

Market research deals specifically with the gathering of information about a market's size and trends. Vendors are usually happy to provide cost information because it gives them an opportunity to market their services. Be sure to let them know you are only looking for generic cost data for planning and analysis purposes, and that no procurement is planned at the present time. Organizations such as the Gartner Group and IDC Government can also provide assistance in developing cost data.

Contact several sources to provide cost estimates for computer hardware, software, networks, user support, outsourcing, etc. Prepare clear, detailed performance requirements to be the basis for the estimates. Quotes from multiple sources (if possible) will provide an average figure that should be realistic price. Check the technical content and scope of the quotes: low estimates may be omitting some necessary (and costly) services. Also, remember that a vendor quote is not usually prepared with the same level of effort as a bid on a contract.

The Request for Proposal (RFP) and Request for Information (RFI) are several formal solicitation methods available to collect information from potential providers or suppliers. The RFP is an invitation for providers of a product or service to bid on the right to supply that product or service to the individual or entity that issued the RFP. The RFI is a standard business process to collect written information about the capabilities of various suppliers. Both solicitation methods have required procedures established by Supply Chain Management and the Project Management Division, Virginia Information Technologies Agency.

3. Industry Publications and Trade Journals

Industry publications and trade journals provide not only information on new products, but often include general prices and frequently publish reviews or comparisons of similar products.

4. Web sites

Web sites frequently include pricing and are a good source of information. The Department of Planning and Budget is a potential source for cost data (Cost Category Model – Table 3.1) and the Virginia Department of Human Resource Management identifies labor categories and rates.

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C. Identify and Document Benefits

Benefits are the services, capabilities, and qualities of each alternative system and can be viewed as the return on investment (ROI).

1. Identify Benefits

Every proposed major IT project for an agency should have identifiable benefits for both the agency and its customers. Identifying these benefits will usually require an understanding of the business processes of the agency and its customers.

Some benefits realized by the agency are flexibility, organizational strategy, risk management and control, organizational changes, and staffing impacts. For example, new major IT projects may allow some personnel to perform two different jobs with little or no extra training; or the new system may allow organizational changes that reduce the number of managers, or the new system may allow some jobs to be eliminated. These benefits are often measured in terms of productivity gains, staffing reductions, and improved agency effectiveness.

Possible benefits to customers include improvements to the current IT services and the addition of new services. These benefits can be measured in terms of productivity gains and cost savings, but the customers must be the ones to identify and determine how to measure and evaluate the benefits. Customer surveys are often needed to identify these benefits. At a minimum, the customers should be interviewed to identify the potential impacts of new or modified systems.

Consider the potential impact of a new or modified system in terms of:

- **Accuracy** -The degree of conformity of a measured or calculated value to its actual or specified value.
- **Availability** -The degree to which a system, subsystem, or equipment is operable and in a committable state at the start of a mission
- **Compatibility** - Capability of two or more items or components of equipment or material to exist or function in the same system or environment without mutual interference.
- **Efficiency** -measure of speed and cost.
- **Maintainability -** the ease with which a software system or component can be modified to correct faults, improve performance, or other attributes, or adapt to a changed environment.
- **Modularity -** the extent to which a system is made up of pieces independent in their own right, which makes for the easy assembly of simple autonomous parts into complex structures, is a hallmark of new software; software that's built for networking.

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- **Reliability** - The probability that a functional unit will perform its required function for a specified interval under stated conditions.
- **Security -** A condition that results from the establishment and maintenance of protective measures that ensure a state of inviolability from hostile acts or influences.

See Attachment A for a Comprehensive List of Benefit Characteristics

When gathering data in preparation for evaluation of investments, include all benefits regardless of whether or not they initially appear difficult to support or quantify.

2. Determine Tangible Benefits

Tangible benefits originate from increased revenue, cost reduction, and cost avoidance. They measure, in dollar savings, the impact of an alternative on people, equipment, time, space and facilities, and support materials.

3. Identify and Document Intangible Benefits

It is necessary to identify and document intangible benefits for each alternative. These benefits are subjective issues that can exert strong influences on the alternative selection process, but can seldom be measured in dollar terms. Some intangible benefits are:

- Better and/or timelier decision-making
- More accurate information
- Better reporting
- Political response
- Goodwill in the community
- Personnel morale

4. Quantify the Intangibles

Intangible benefits from IT investments are usually hard to quantify. Even bona fide impacts that enjoy a high probability of actually occurring can be excluded from the financial results because assigning a dollar value to that benefit is not a straightforward process.

The CBA should document all intangible benefits, including those that cannot be measured in terms of dollar value. The CBA should clearly and concisely state the qualities of the intangible benefit and logically construct the conditions under which the benefit will influence the alternative.

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The recommended format for documenting intangible benefits is:

1) Intangible Benefit Name
2) Description
3) Assumptions
4) Advantages
5) Conclusions

III. Analyze Data

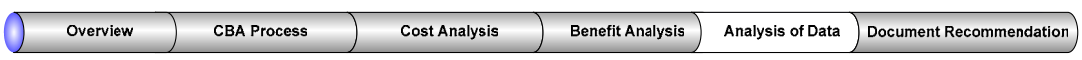
A. Spreadsheet Modeling

The spreadsheet model instructions and template that follow assists project managers and agency management in assembling and analyzing information to determine the best solution to resolve the business problem. It also provides information to support management decisions on whether the project should be undertaken. The spreadsheet model presents, in a systematic manner, the solution selected, and the rational, for that selection.

The spreadsheet model is. . .

Easy to use	Design makes the model easy to operate with simple links and navigation buttons.
Easy to understand	Built to specific requirements with clear instructions.
Reliable	Spreadsheet was tested thoroughly.

At this point in the CBA process, the data is captured in a spreadsheet model. Information from the spreadsheet is transferable to the Project Proposal Document and Project Charter. The spreadsheet model tool will guide you through the cost/benefit analysis process with simple links, navigation buttons, and color-coding. The detail instructions for the spreadsheet model are available on the VITA web site (hyperlink).



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B. Comparison of Solutions

Selection of a recommended solution is based on the comparison of how well each solution meets the same established criteria. Compare only the criteria used in the analysis of the solutions. Various techniques can be used in making this comparison. Such techniques include pro versus con comparison, plus or minus comparison, and numerical grading or ranking in a matrix format. A decision table utilizing any of these techniques should be prepared as part of the project analysis worksheet.

Based on the analysis performed, rate how each solution measured up against each decision criterion. A recommended Rating Scale is: 1 = Very Poor, 2 = Poor, 3 = Fair, 4 = Good, 5 = Very Good. Compare the rating results to determine which solution to recommend.

Decision Criteria	Solutions						
Business Process Impact							
Technical Feasibility							
Maturity of Solution							
Resources Required							
Constraints Impact							
Cost Benefit Analysis							
Return on Investment							
Other							

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C. Sensitivity Analysis

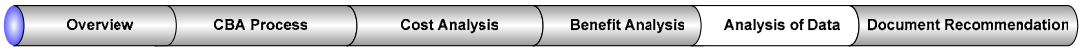
Sensitivity Analysis is a technique for determining the outcome of a decision if a key prediction turns out to be wrong. It indicates how much an investment's return (or Net Present Value) will change in response to a given change in an independent input variable, with all other factors held constant. This technique can be used on one variable at a time, or on a group of variables (sometimes referred to as scenario analysis). As a general practice, variables with either the greatest uncertainty or variables that represent major components of an IT investment are selected for analysis.

D. Risk Analysis

All investments involve some degree of risk. Decision makers should know the likelihood of achieving the forecasted results of a proposal in order to make prudent decisions. Furthermore, identification of the explicit risk factors will initiate effective countermeasures to mitigate risk where possible.

After completing a Preliminary Risk Analysis Worksheet for each alternative, determine the level of risk for the alternatives using the risk score. Use the Preliminary Risk Analysis Worksheet for the selected solution in the Project Proposal by completing Section G (shown below) and attaching the risk worksheet as Appendix C.

Risk Item	***Risk Level***	***Risk Score***
Budget Risk *What level of risk does the proposed budget represent to the project?*	High (18–25) Medium (9-17) Low (1-8) None (0)	
External Dependencies Risk *How dependent is the project on other projects or work efforts?*	High (11–15) Medium (6-10) Low (1-5) None (0)	
Management Risk *What level of risk does the organization's project management capability represent?*	High (11–15) Medium (6-10) Low (1-5) None (0)	



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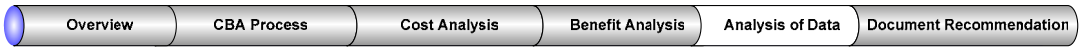
Mission Critical Risk *How critical is the project success to the success of the organization?*	High (11–15) Medium (6-10) Low (1-5) None (0)	
Failure Risk *What is the risk of failure?*	High (11–15) Medium (6-10) Low (1-5) None (0)	
Complexity Risk *How complex is project?*	High (11–15) Medium (6-10) Low (1-5) None (0)	
Preliminary Risk Assessment *What is the overall risk of the project?*	High (73–100) Medium (36-72) Low (1-35) None (0)	***Total Risk Score:***

Even the most carefully deliberated cost and benefit assessment carries some level of risk and uncertainty. All IT investments and projects should have a formal risk management plan in place regardless of the perceived level of need for it.



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E. Return on Investment

Return on Investment is a ratio of the net benefits to the total cost of an investment for the same specific period.

Return on Investment (ROI) is a financial accounting measurement for determining the value of making a specific investment. ROI is a ratio of the net benefits to the total cost of an investment for the same specific period. The two principle concerns with ROI are that the calculations do not account for the time value of money and the calculations assume a consistent annual rate of return. ROI is a useful measure when comparing alternatives using the same cost and benefit criteria for the same period.

The formula for calculating ROI is:

ROI% = Net Benefit / Cost X 100

Net Benefit = Benefits - Cost

The difficulty inherent in calculating the ROI for an investment arises from the problems associated with identification of all the benefits received and all the costs incurred from an investment. ROI may be calculated for any time period**;** but when making investment decisions**,** calculate ROI for the total life of the investment.

Agencies need to revisit their assumptions on a regular basis, update their data, and re-evaluate their ROI calculations. A solid and thorough ROI analysis comfortably nestles in the life cycle approach to IT investment and management. A well-performed analysis will build a comprehensive and reliable history of costs and decision-making outcomes that are updated throughout the life of the project.

Agencies should build an accessible record of this archived information to facilitate better and easier evaluation of future projects.

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F. Payback

The payback method determines the time necessary for a new investment to pay for itself. Payback does not measure profitability, but cash recoverability. Payback tends to show the risk factor by pointing out the recovery time of an investment. Its primary advantage is its simplicity - it is quick to calculate and easy to understand. Its limitations include:

-Does not consider the benefit of net results after the investment has been repaid - it is a break-even measurement, not a profitability measurement; and

-Does not take into account the time value of money.

			Year			
Project A	0	1	2	3	4	5
Total Net Benefit		60	60	60	60	60
Initial Investment	200					
Project B	0	1	2	3	4	5
Total Net Benefit		80	75	70	65	0
Initial Investment	200					

In the above example, the payback of project A is 3.3 years. This is determined by adding the expected annual cash flows until the original investment has been recovered. Thus, by the end of year 3, $180,000 of the original investment has been recovered; and, about one third of the way into year 4, the final $20,000 of the initial investment would have been recovered. Following this procedure for investment B, the customer discovers that the payback for this equipment is 2.6 years.

G. Net Present Value (NPV)

The net present value (NPV) of an investment is the present (discounted) value of future cash inflows minus the present value of the investment and any associated future cash outflows. By considering the time value of money, it allows consideration of such things as cost of capital, interest rates, and investment opportunity costs.

NPV is important because without using the net present value of benefits and cost the comparisons drawn between solutions in the out years are not accurate. This metric recognizes that money has different real value over time and makes the values of money constant by discounting costs and benefits over a specific period of time—an asset's life cycle or any selected period of analysis. NPV allows managers to compare, on purely financial factors, investment alternatives with widely disparate cash flows. NPV facilitates objective evaluation of projects regardless of scale differences or the

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existence of capital rationing, and can be used to compare independent or mutually exclusive projects.

For each year of the analysis period, cash inflows (benefits) and cash outflows (costs) are totaled and then summed to arrive at the net impact on cash. The net cash flow is then multiplied by an appropriate discount factor to arrive at a discounted cash flow for each year. NPV is the total of these discounted cash flows over the period of analysis.

Generating a meaningful NPV requires sound estimates of the costs and benefits of a project, use of the appropriate discount rate, and the identification of the timing of cash receipts and disbursements. NPV focuses on an investment's impact on cash flow rather than net profit, or savings in the case of non-revenue generating entities. Thus, only an investment's effects on cash are considered.

In the example below, we see that project B is the more favorable investment with a NPV of $5,448. The projected cash flow each investment generates are discounted at a 16% rate and then totaled with the initial investment cash outflow of $200,000. The result is the Net Present Value.

		Project A		Project B	
Year	**Present Value of $1**	**Cash Flow**	**Discounted Cash Flow**	**Cash Flow**	**Discounted Cash Flow**
0	1.0	(200,000)	(200,000)	(200,000)	(200,000)
1	.862	60,000	51,724	80,000	68,966
2	.743	60,000	44,590	75,000	55,737
3	.641	60,000	38,439	70,000	44,846
4	.552	60,000	33,137	65,000	35,899
5	.476	60,000	28,567	0	0
	NPV		(3,543)		5,448

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IV. Document Recommendation in Project Proposal

Prepare the recommendation in a format prescribed by the COV Project Proposal. The Project Proposal requires an economic justification for the project based upon the Cost Benefit Analysis and the expected return on investment. Identify the estimated funding resources required to complete the project and then identify the funding requirements to operate or maintain the product(s) or service(s) developed from the project.

Cost/Benefit Analysis Summary (Section F.1.) of the Project Proposal

Answer the following questions in the space provided. Attach detailed explanations and analysis as appendices.

a. Summarize the results of the Cost Benefit Analysis. Explain why the expected monetary and non-monetary benefits validate the expenditure of resources for this project. Attach the Cost/Benefit Analysis Summary Report as Appendix A. Describe savings achieved and separate savings from cost avoidance.

b. Summarize the results of the Return on Investment Analysis. Provide ROI for 5 years. If the project does not have a positive expected return on investment, explain why this project proposal should be approved.

Anticipate areas of discussion, including intangible benefits, and prepare charts and graphs to display critical elements such as payback comparisons. Intangible benefits should be presented and discussed to ensure that their implications are understood.

The recommendation conveys an understanding of the problem faced by the agency, the alternatives considered, the alternative chosen to solve the problem, and the costs involved in implementing the recommended solution.

The Cost/Benefit Analysis Report template is a required deliverable. Although the use of the report template is required, use of the CBA tool is not mandated but is recommended. The CBA Report template on the following pages contains information and the prescribed format of the Report, which makes up the Appendix A of the Project Proposal.

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Cost /Benefit Analysis Summary Report

Provide basic information about the project including: **Project Title** – The proper name used to identify this project; **Project Working Title** - The working name or acronym that will be used for the project; **Proponent Secretary** - The Secretary to whom the proponent agency is assigned or the Secretary that is sponsoring an enterprise project; **Proponent Agency** – The agency that will be responsible for the management of the project; **Prepared by** – The person(s) preparing this document; **Date Prepared** - The date this document is initially prepared.

Section 1 -- Project Statement

Project Title:	
Project Working Title:	
Proponent Secretary:	
Proponent Agency:	
Proponent Agency Number:	
Prepared by:	
Date Prepared:	

The **Business Problem** is a question, issue, or situation, pertaining to the business, which needs to be answered or resolved. State in specific terms the problem or issue this project will resolve. Often, the Business Problem is reflected as a critical business issue or initiative in the Agency's Strategic Plan or Information Technology Strategic Plan. **Note:** Equates to Section B.1. in the Project Proposal.

Business Problem
The Business Problem is a question, issue, or situation, pertaining to the business, which needs to be answered or resolved. State in specific terms the problem or issue this project will resolve. Often, the Business Problem is reflected as a critical business issue or initiative in the Agency's Strategic Plan or IT Strategic Plan.

The Anticipated (proposed) Funding Source **estimate is entered in the appropriate category.** The Comments column is provided for additional explanation or clarification of estimated values. Note: Equates to Section F.2. in the Project Proposal.

Anticipated (proposed) Funding Source		
Funding Source	Total	Comments
General Fund		
Non-General Fund		
Federal		
Other		
Total	$0	

Appendix D: Cost/Benefit Analysis Guide

Section 2 - - Solutions Analysis – Intangible Benefits

Describe each potentially viable solution, and list all intangible benefits for that solution.

Section 2 -- Solutions Analysis - Intangible Benefits	
Solution # 1	**The "As Is" Solution Description**
	Briefly describe Solution # 1 -- that is, the current process for the business problem summarized above will be retained.
	The "As Is" Solution Intangible Benefits
	List the intangible benefits associated with this solution.

Section 3 - - Solutions Analysis – Tangible Benefits

The regions (cells) not highlighted will be populated based on input from the spreadsheet modeling tool. It is recommended that you use the spreadsheet-modeling tool to calculate the base numbers for the CBA. If you choose to collect, the base numbers outside of the tool this section of the CBA summary report will not be activated and must be created manually.

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	Discount Rate 2: 3.0%	Note(s)	Base Budget Cost	As Is	Option A	Option B
Business Process Costs	1. Ongoing Personnel Costs		$0	$0	$0	$0
	2. Ongoing Facilities Costs		$0	$0	$0	$0
	3. Ongoing Hardware Costs		$0	$0	$0	$0
	4. Ongoing Software Costs (incl. Maint.)		$0	$0	$0	$0
	5. Other Ongoing Costs		$0	$0	$0	$0
I.T. Project Investment Costs	6. Project Costs	Note(s)			$0	$0
	6a. Internal Staff Labor				$0	$0
	6b. Services				$0	$0
	6c. Software Tools				$0	$0
	6d. Hardware				$0	$0
	6e. Materials and Supplies				$0	$0
	6f. Facilities				$0	$0
	6g. Telecommunications				$0	$0
	6h. Training				$0	$0
	6i. IV & V				$0	$0
	6j. Contingency (Risk)				$0	$0
	6k. User Defined Item 1 (chg name as needed)				$0	$0
	6l. User Defined Item 2 (chg name as needed)				$0	$0
	6m. User Defined Item 3 (chg name as needed)				$0	$0
	6n. User Defined Item 4 (chg name as needed)				$0	$0
	6o. User Defined Item 5 (chg name as needed)				$0	$0
	7. Revenue		$0	$0	$0	$0

Incremental Benefits Summary

Tangibles Analysis	Benefit Type	Benefit Code		As Is	Option A	Option B
	Cost Avoidance (One Time)	CAO		$0	$0	$0
	Cost Avoidance (On-Going)	CAA		$0	$0	$0
	Hard (Cost) Savings	HCS		$0	$0	$0
	Productivity Gains	PRO	NOT MEASURED			
	Revenue	REV		$0	$0	$0
	Other	OTH	NOT DEFINED			
	To Be Assigned	TBA	NOT DEFINED			
				ROI:	N/A	N/A
				Payback:	N/A	N/A

Benefits Summary

This section of the CBA Summary Report is populated based on the input from the spreadsheet-modeling tool. If you choose to collect, the base numbers outside of the tool this section of the CBA summary report will not be activated and must be created manually.

Benefits Summary by Cost/Revenue Category								
Option A		Personnel	Facilities	Hardware	Software	Other	Revenue	Total $
	Avoidance-One Time	$0	$0	$0	$0	$0	$0	$0
	Avoidance-Ongoing	$0	$0	$0	$0	$0	$0	$0
	Hard Cost Savings	$0	$0	$0	$0	$0	$0	$0
	Revenue	$0	$0	$0	$0	$0	$0	$0
	Total Benefits	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Option B								
	Avoidance-One Time	$0	$0	$0	$0	$0	$0	$0
	Avoidance-Ongoing	$0	$0	$0	$0	$0	$0	$0
	Hard Cost Savings	$0	$0	$0	$0	$0	$0	$0
	Revenue	$0	$0	$0	$0	$0	$0	$0
	Total Benefits	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

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Selection of a recommended solution is based on comparison of how well each solution meets the same established criteria.

Solution Comparison

Rate the solutions between 1 and 5 (1 is the lowest rating, 5 is the highest rating)

Criteria	Intangible Weights	Solution 1	Solution 2	Solution 3
Net Benefit				
Return on Investment (ROI)				
Payback Period				
Better / More Timelier Decision Making	1			
Improved Accuracy, Improved Reporting	1			
Legal / Political Imperative	1			
Other Intangible Benefit(s)	1			
Total Rating		0	0	0

Intangible Weighting Justification

Note: Intangible Weight Justification is Not Required

Specify the **Selected Solution** selected as a result of the analysis. Explain why the selected solution was chosen over the other solutions considered.

Selected Solution

Identify the Selected Solution and provide justification for the selection.

Reminder:
Attach the completed Cost/Benefit Analysis Summary Report to the Project Proposal before submitting to PMD.

Appendix D: Cost/Benefit Analysis Guide

Attachment A: List of Benefit Characteristics

The following classification is provided for the purpose of illustrating identification of characteristics of benefits:

Expanded services or products delivered to public and internal or external customers:

- **Improves ability to deliver** –
  Providing staff with access to information via desktop PC's allows them to respond to customer inquiries more accurately and quickly.
- **Improves access to services** –
  The investment increases the number of people reached. Customers can communicate with an agency by telephone, e-mail, or Internet in addition to existing mail services.
- **Improves access to information** –
  Internal users gain direct access to resources or information enabling them to perform daily tasks more efficiently. The Public can obtain information on tax issues, health services, etc. via the Internet or telephone.
- **Improves accuracy** –
  The investment improves accuracy by reducing the need for manual data entry or reducing number of data entry errors, thus improving integrity of data. This may also improve productivity and reduce operating costs by reducing time spent on error correction.
- **Improves compatibility** –
  One alternative is more compatible with existing facilities and procedures, requiring less training of personnel or less new equipment and software. System meets agency's IT architecture requirements.
- **Improves effectiveness and impact of information delivered** –
  On-line interactive training tutorials provide employees unlimited opportunities to improve skills, increase participation in training, and improve retention of new information. This may increase productivity, reduce turnover, etc.
- **Improves security** –
  System improves security in terms of fraud prevention, protection of confidential information, or enhances data integrity.
- **Reduces risk** –
  Back-up systems that reduce the risk of data loss or applications that improve timely delivery of critical information.

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Cost Savings/Cost Avoidance:

- **Improves the ability to maintain a system** –
  Investments for which maintenance resources (personnel, experience, components) are more readily available. Ease of maintenance is relevant to both software and hardware.
- **Eliminates duplicate assets** –
  Investments that replace multiple, non-compatible, stand-alone systems.
- **Improves reliability** –
  System has better performance record (less down-time) than legacy process or system. Reductions in downtime inversely impact productivity and may also reduce labor costs.
- **Accommodates increases in workload or demand without additional costs**
  Systems that will 'avoid' hiring additional personnel to handle increased workload or new agency responsibilities in the future.
- **Reduces manual operations** – Systems that automate manual processes thereby freeing staff resources to perform other functions, reducing or eliminating FTE requirements. Systems that allow functions to be performed by lower level staff.
- **Improves efficiency** – Assets that improve access to information or tools that decrease time required to perform daily functions. A system may provide faster or more accurate aggregation and analyses of data.

Enhanced Work Environment:

- **Facilitates ease of use** –
  Although user-friendly systems are generally thought of in terms of increased efficiency or productivity, they can also improve the social and physical environment for employees.
- **Improves physical environment** –
  Systems that reduce the amount of paper clutter in the work area, noise, or eyestrain.
- **Improves response rates** –
  Assets that reduce stress by improving employees' ability to respond to customer inquiries.

Appendix D: Cost/Benefit Analysis Guide

Attachment B: Questionnaire for Initial Data Collection

Audience: Project Manager and Team should review the following questions.

1. What are the agency's/function's/group's major goals and strategies?

2. How will your agency change over the next five years?

3. Who are your customers/constituents? What do you provide to your Customers/constituents?

4. What is your "service"? How do your activities fit in with delivering that service?

5. What is success to you and to your stakeholders? How is that success measured?

6. What are the step-by-step activities that occur in your group to get your "service" to your "customer"?

7. How does your group interact with other groups? Who are you dependent on and who is dependent on you for success?

8. How many people are involved in your group? How many projects, activities? What is the average project time?

9. What are your average costs of labor and other factors?

10. Where do you see the most problems in accomplishing your job (in your group, department, agency)?

11. What are the major problem areas you plan to address this year? How do you rank them in importance?

12. How does this problem hurt your group, department, agency, etc.? Are you losing time, money, quality, etc.? How much? What is the impact to your group and your agency?

Appendix D: Cost/Benefit Analysis Guide

Attachment C: Questionnaire for Benefits Verification

Audience: Project Manager and Team should review the following questions

1. What benefits do you expect to see from these proposed changes? Can you see [specific benefit] occurring?

2. How much improvement do you expect in time, quality, cost reduction for labor, materials, etc., cost avoidance for labor, etc., revenue?

3. Will all the benefits occur in your area [direct benefits] or will some occur in other areas [indirect benefits]?

4. Do you agree that this proposal can help you address your problems?

5. Do the benefits look right to you and do you believe that this solution will generate benefits in the estimate ranges?

6. Here are some additional benefits that we have uncovered. Do you think you could see any of these occurring with this investment?

7. Are there any potential benefits missing from the list?

8. Are there any additional expenditures that you may need to make if you implement this solution that I am proposing?

9. How would you use any time benefits achieved by this investment? To lower labor costs, increase revenues or a mixture of the two?

10. I have made a summary sheet of the expected amount of benefits that we agreed could result from this investment, could you please help me estimate the dollar value for each of these?

11. What percentage of each of the benefits we discussed earlier do you feel could be attributed to the proposal?

12. Do these benefit estimates look okay? If not, how would you change them?

13. What is high, low, most likely levels of benefits you would expect to see from implementing this proposal?

14. Do you feel that you have all the information you need and that your managers need to understand the value of this proposal to your business?

15. Do you understand the strategic impact of this investment, how it will change

the way you do business, and how to manage it to achieve your desired goals and benefits?

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16. How can we prove the value of this investment to your senior managers?

Appendix D: Cost/Benefit Analysis Guide

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